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EARLY PALEOZOIC FOSSILS IN THE NERUOKPUK FORMATION, NORTHEAST ALASKA

By

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Early Paleozoic fossils in the Neruokpuk Formation, northeast Alaska

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The discovery of five fossil horizons in the Neruokpuk Formation of northeast Alaska shows that most of the lower Paleozoic as well as part of the Precambrian are represented by that formation.

The Neruokpuk comprises a great variety and thickness of sedimentary and volcanic members, locally of low metamorphic grade, overlain with regional angular unconformity by Mississippian rocks (Reiser, 1970). Ages of Precambrian to Devonian have been suggested for different parts of the formation, but no fossils had been reported prior to the regional mapping of the Northeast Brooks Range begun in 1969.

In 1970 Lower Cambrian and Upper Cambrian trilobites were found in the volcanic and carbonate member, and echinoderm fragments were found in a calcareous siltstone and sandstone member that lies below the volcanic and carbonate member and rests unconformably on the quartzite basement. In 1971 a graptolite, of Late Ordovician age, was found in black slate associated with volcanic rocks in the northern part of the Neruokpuk outcrop belt. Trace fossils that occur with the graptolite represent the Nereites community, an indicator of relatively deep water turbidite sedimentation. At the southern margin of the outcrop belt, brachiopods identified as Middle(?) or possibly Early Devonian were found in a previously unrecognized sandstone member. This sandstone rests unconformably on the chert and phyllite member which in turn rests on the volcanic and carbonate member. Both the Devonian sandstone member and the chert and phyllite member are truncated by the sub-Mississippian unconformity. Thus

it appears that the complex structure of the Neruokpuk results from several early Paleozoic tectonic episodes rather than from a single Late Devonian-Early Mississippian orogeny.

The locations and brief descriptions of the fossil collections are listed below:

Collection 70ARR 298A: Trilobites

Mt. Michelson quadrangle (69°00 3/4' N., 146°03 1/2' W.)

Olenellus s.s.

Lower Cambrian

(Identified by M. E. Taylor; A. R. Palmer; J. T. Dutro, Jr.)

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Collection 70ABe 173C: Trilobites and brachiopods

Demarcation Point quadrangle (69°20 3/4' N., 142°39' W.)

Geragnostus sp.

Saratogia sp.

ptychoparioid trilobite ("like a relative of Taenicephalus")

Billingsella sp.

Upper Cambrian

(Identified by A. R. Palmer; J. T. Dutro, Jr.)

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Collection 70ABe 176A; Brachiopods

Demarcation Point quadrangle (69°20 1/2' N., 142°40' W.)

Billingsella?

Upper Cambrian(?)

(Identified by J. T. Dutro, Jr.)

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Collection 70ARR 316; Echinoderm fragments

Demarcation Point quadrangle (69°13 3/4' N., 142°46 1/2' W.)

Paleozoic

(Identified by J. T. Dutro, Jr.)

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Collections 71ABe 430D and 431E: Graptolite and trace fossils

Demarcation Point quadrangle (69°26 1/2' N., 141°00' W.)

Orthograptus of the

O. quadrimucronatus type

Upper Ordovician

(Identified by W. B. N. Berry)

Nereites

Dictyodora

Paleodictyon?

Zoophycos?

(Identified by J. T. Dutro, Jr.)

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Collections 71ABe 459E and 463A, B, C: Brachiopods, pelecypods and trilobites

Demarcation Point quadrangle (69°00 1/4' N., 143°21 1/2' W.)

Warrenella? sp.

Goniophora sp.

Deceptrix sp. (or

Nuculoidea sp.)

? Eoschizodus sp.

Actinopteria sp.

Dechenella sp.

Middle(?) Devonian

(Identified by J. T. Dutro, Jr., and John Pojeta, Jr.)

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Reference

Reiser, H. N., 1970, Northeastern Brooks Range, a surface expression of the Prudhoe Bay section, in Adkison, W. L., and Brosgé, M. M., eds., Proceedings of the Geological Seminar on the North Slope of Alaska, Pacific Section, Amer. Assoc. Petroleum Geologists, Los Angeles, Calif., p. K1-K13.